AMATEUR RADIO DIGITAL COMMUNICATIONS

EVENT

Saturday August 19, 2023 @3 pm in Room #1

Presenter: Jon Kemper- Technical Director (KA6NVY)

Huntsville Hamfest

Huntsville Hamfest - Huntsville, AL

Who We Are

Amateur Radio Digital Communications (ARDC) is a California based 501(c)(3) non-profit private foundation.

It exits to support amateur radio and digital communication science and technology by:

- Making $ grants
- Providing 44Net (AMPRNet) community resources

Core Values

- Curiosity
- Experimentation
- Respect
- Accountability
- Openness & Transparency
- Inclusiveness
- Fairness
- Generosity & Gratitude

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Who We Are

Board of Directors:

- **President:**
  Bdale Garbee — *KB0G*
- **Treasurer:**
  kc claffy — *KC6KCC*
- **Secretary:**
  John Gilmore — *W0GNU*
- **Director:**
  Phil Karn — *KA9Q*
- **Director:**
  Keith Packard — *K7WQ*
- **Director:**
  Ria Jairam — N2RJ

Staff:

- **Executive Director/CEO**
  Rosy Schechter – *KJ7RYV*
- **Technical Director**
  Jon Kemper – *KA6NVY*
- **Grants Manager**
  Chelsea Párraga – *KF0FVJ*
- **Communications Manager**
  Rebecca Key – *KO4KVG*
- **Outreach Manager**
  John Hays – *K7VE*
- **Operations Manager**
  Merideth Stroh – *KK7BKI*

Contractors:

- **44Net Administrator + IT Lead**
  Chris Smith – *G1FEF*
- **Technology Management Consultant**
  Tim Požár – *KC6GNJ*

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Who We Are

TAC

Ambassador

- **Staff Lead:** Jon Kemper – *KA6NVY*
- Pierre Martel – *VE2PF*
- Adam Lewis – *KC7GDY*
- Zachary Seguin – *VA3ZTS*
- Rob Janssen – *PE1CHL*
- Chip Eckardt – *W9OQI*
- Dave Gingrich – *K9DC*
- Rich Gopstein – *KD2CQ*
- Alvaro Prieto – *KC2VVE*
- Ian Redden – *VA3IAN*
- Randy Neals – *VE3RWN/W3RWN*

GAC

- **Staff Lead:** John Hays – *K7VE*
- **Chair:** Bob Witte – *K0NR*
- Dewayne Hendricks – *WA8DZP*
- Douglas Kingston – *KD7DK*
- Brian Mileshosky – *N5ZGT*
- Leandro Soares Indrusiak – *G5LSI*
- Don Prosnitz – *N6PRZ*
- Dennis Derickson – *AC0P*
- William Thomas – *WT0DX*
- Katie Allen – *WY7YL*
- Judi Clark – *KK6ZCU*
- Randy Wilkinson – *W4LKS*
- Jim Idelson – *K1IR*
- Kristin Paget – *KJ6GCG*
- David Burgess

Community

- Jann Traschewski – *DG8NGN*

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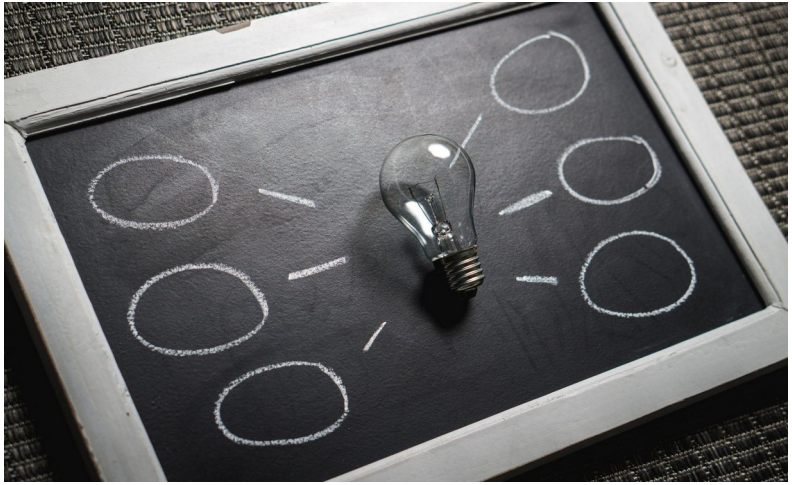
What is 44Net / AMPRNet?



a. Facebook for hams?
b. A country code for an autopatch in the UK?
c. An automated defense network run by Cyberdyne Systems Corp?
d. An IPv4A Artisan Beer?
e. Something else?

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What is 44Net / AMPRNet?

Definitions:

- AMPRNet stands for “Amateur Packet Radio Network”
- 44Net refers to a block of ~12 million publically routable IPv4 addresses between 44.0.0.0 and 44.191.255.255 (44/9 & 44.128/10)

  Read more at: https://en.wikipedia.org/wiki/AMPRNet

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Background / History

1981	Hank Magnuski KA6M acquired block of class A IPv4 44/8 (~16 Million). The world has run out and IPv6 is slow to adopt.
2011	Formation of ARDC to be the trustee of the 44Net address space by Brian Kantor WB6CYT-SK
2019	Sale of 25% of the IPv4 addresses created an endowment to fund ARDC operations including grant giving
2020	Grants are funded. Today running at about $5.5 Million / year
2022	Technology department is formed and 44Net starts

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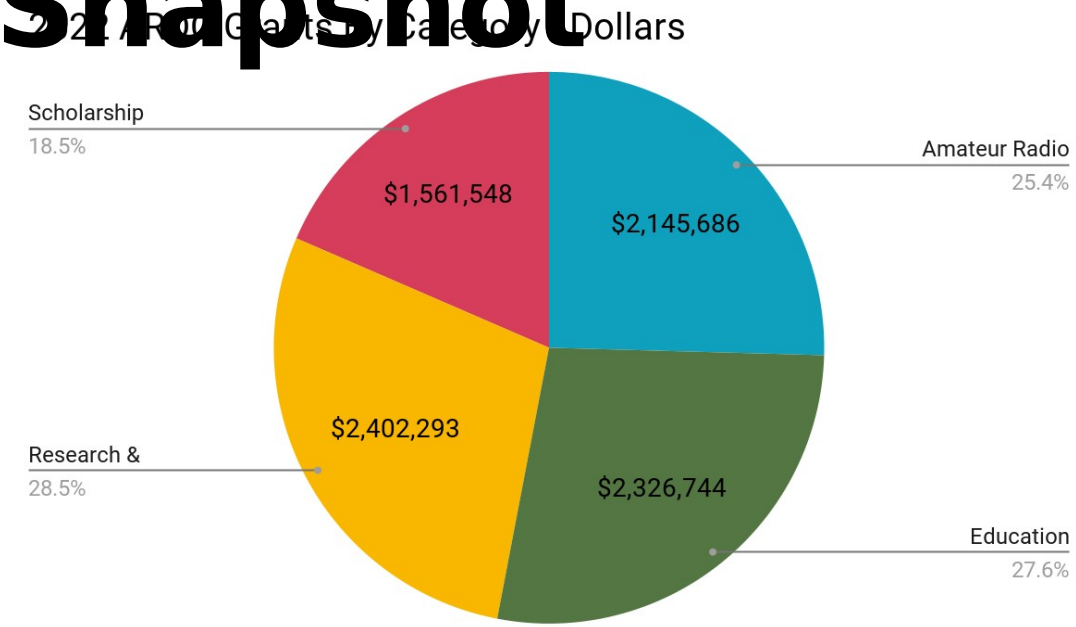
Grants!

2022 Grants Snapshot



Worldwide grants made in 2022:

101 Grants

Dollars distributed in 2022:

~$8M

Number of people directly impacted:

~14,000 People

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Grants Update

All-Time Number of grants made:

187 Grants

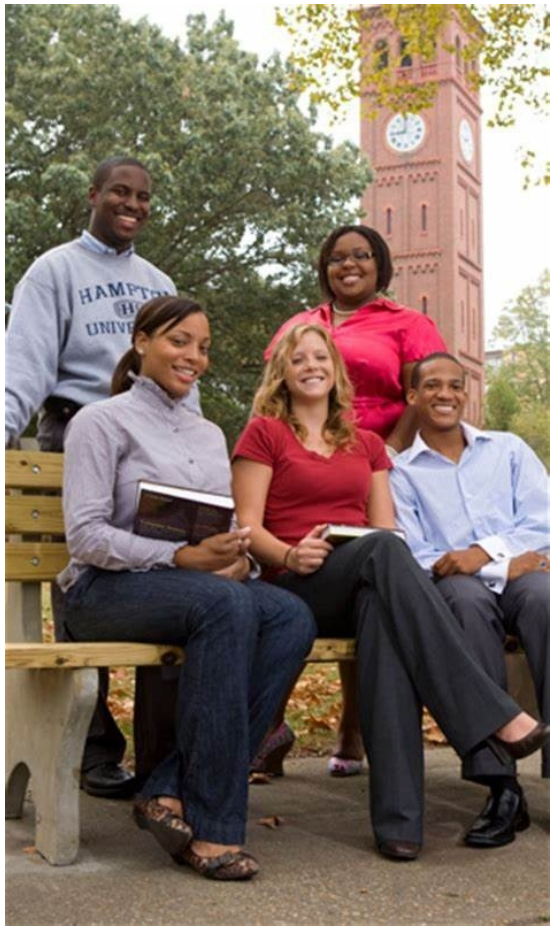
All-Time Dollars distributed:

~$20,900,000

Number of people directly impacted:

71,193 People

Pictured: Left are students at Norwich Free Academy, Right are Hampton University Scholarship recipients



Applying for a Grant

Apply anytime!

The earlier in the cycle the bet

Upcoming 2023 review dates:

- Oct. 1st

Information: ardc.net/apply/

Apply: grants.ardc.net

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Grantee Requirements

ARDC makes grants to **nonprofit organizations,** which fall into the following categories:

- **US IRS 501(c)(3) Non-Profit Public Charities** or their International Equivalents
- **Non-Profit Educational Institutions** (US and International)
- **Government projects** that align with our mission
- In some cases, groups and individuals may elect to be sponsored by an entity meeting the above requirements. This is known as **fiscal sponsorship**.

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Photo Credit: K7UAZ University of Arizona Amateur Radio Club, who received a grant to renovate their HF station and satellite station

Grant Category: Support and Growth of Amateur Radio

- Clubs
- Licensing classes
- Continuing education
- Community outreach
- Club station update or enhancement
- Repeater and network infrastructure
- Certain emergency communications projects

We are particularly interested in projects which include ***underrepresented individuals and groups.***

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Grant Category: Education

- Scholarships
- K-12 school programs
- College programs
- Programs aimed at underserved groups.

ARDC funds scholarships indirectly through other programs.

Students try their hand at fox hunting at Woodridge Middle School.

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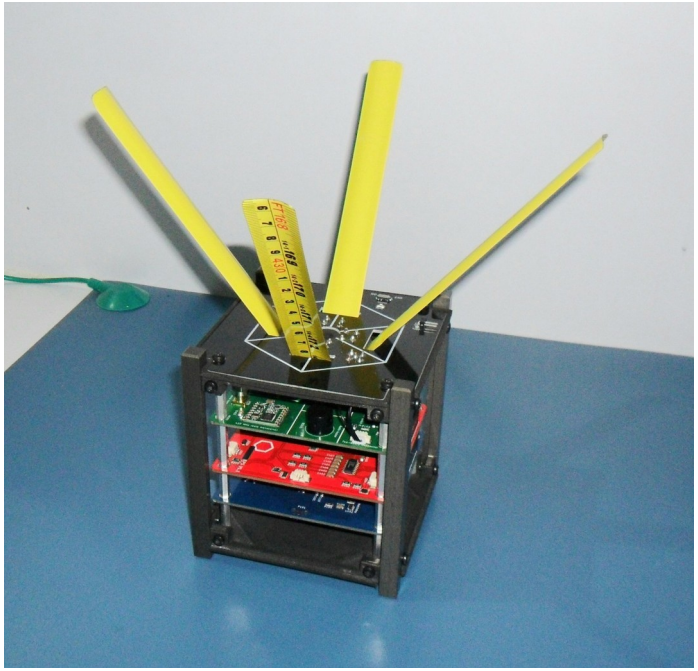

Photo Credit: Paradox Sonic Space Research Agency, who is developing India's first open-source satellite

Grant Category: Research and Development

Advancing the state of the art in amateur radio and communication science & technology.

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Applying for a Grant – Key Points

- ✓ Review **ardc.net/apply** and all subpages
- ✓ Most projects take about **one year** to complete.
  - ○ **First-time projects/groups:** one 1-2 year grant to start
  - ○ **Large projects:** consider a multi-phase approach
- ✓ **Line up external resources** (e.g. facilities, personnel, partners, etc.)
- ✓ **Include all expenses** (e.g. taxes, fees, shipping, professional services, indirect costs, etc.)
- ✓ **Select modern, quality, items** that will have an appropriate service life.
  - ○ *Don't "gold plate" and don't under specify.*
- ✓ Have a good **project plan** including who, when, where and why.

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Make your proposal stand out!

- ✓ Include **previous accomplishments**
- ✓ Show **outreach and community building** around your project
- ✓ Describe your **open access / open source strategy**
- ✓ Explain how your project is **innovative** (if it is, ok if not)
- ✓ Describe **inclusiveness and equity** initiatives your group engages in
- ✓ Include how you will **engage youth** to fight the greying of the hobby
- ✓ Be **complete but concise** in your description
- ✓ Include other **fundraising and support** you're receiving

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Applying for a Grant - GAC Review

ARDC looks for grants that further the following goals

- Broad reach
- Social over commercial benefit
- Inclusion of underrepresented groups
- Empowerment of individuals, and distributed rather than centralization
- Preservation of the right to innovate

Open Access Requirement

- ARDC-funded work should be open sourced/access and shared

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How will your project make the world a better place?

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Applying for a Grant – The Process

1. **Create** your proposal
   - Description
   - Goals
   - Project Outline
   - Budget

2. **Submit** your application online at: grants.ardc.net

3. **Application reviews**
   - Staff – eligibility check (don’t forget EIN!)
   - Grants Advisory Committee (GAC) – application review
   - Board of Directors – funding determination

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Applying for a Grant – The Process

Important Notes!

- After the application deadline, it can take 60–120 days for funding decision.
- International Funding can take extra time
- If ARDC needs more information, we will contact you.

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Applying for a Grant – Talk to

- Visit our booth here at **EVENT**
- Members of our staff are here to hear from you and to answer your questions
- Email questions about grants to giving@ardc.net

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44Net!

44Net is Built & operated by hams for hams

- Block of ~12 million class A publicly routable, static IPv4 addresses @44/9 & 44.128/10
- Addresses are free to use and mainly issued to hams for non-commercial use
- ARDC retains ownership of IPs and coordinates addresses and related matters.
- The evolution of 44Net is an open access community resource that helps amateur radio operators, learners, and makers, to democratize technology, and enable use-cases that empower connecting to RF endpoints while learning network engineering skills.
- 44Net technology is evolving beyond IP-IP Mesh tunnels to include geographically located Point-of-[illegible]utomated VPN server technology (AS56508).

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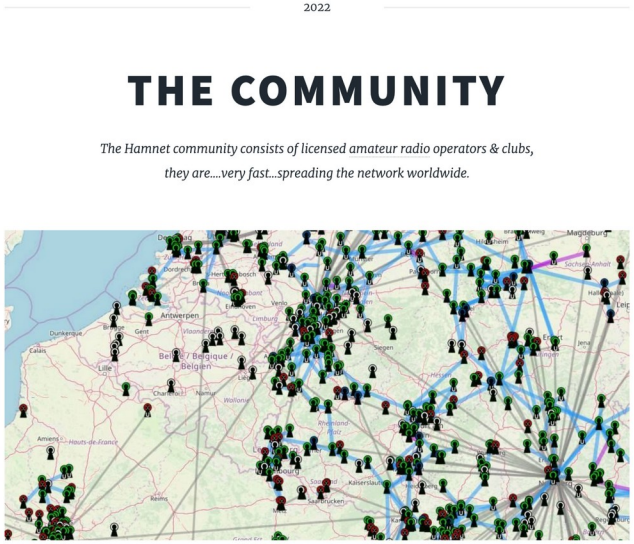
44Net Use Cases- Off the grid Networks+


2022
THE COMMUNITY
The Hamnet community consists of licensed amateur radio operators & clubs,
they are....very fast...spreading the network worldwide.

https://hamnet.eu/site/community.html

- HAMNET (Highspeed Amateur Multimedia NETwork)
- IRLP VPNs (Internet Radio Linking Project)
- HAMWAN (IP digital network for hams)
- EMCOMM
- VPN Routers publicly discoverable through NAT / GCNAT (Mobile and Starlink)
- Internet of Things (IoT)
- IP-IP Mesh (Legacy)
- Repeater Infrastructure
- streaming (Remote SDR)
- / Websites

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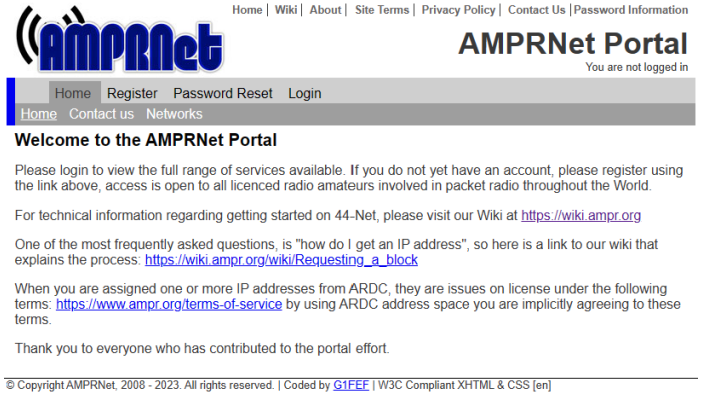
Accessing 44Net


Home | Wiki | About | Site Terms | Privacy Policy | Contact Us | Password Information
AMPRNet Portal
You are not logged in
Home Register Password Reset Login
Home Contact us Networks
Welcome to the AMPRNet Portal
Please login to view the full range of services available. If you do not yet have an account, please register using the link above, access is open to all licenced radio amateurs involved in packet radio throughout the World.
For technical information regarding getting started on 44-Net, please visit our Wiki at https://wiki.ampr.org
One of the most frequently asked questions, is "how do I get an IP address", so here is a link to our wiki that explains the process: https://wiki.ampr.org/wiki/Requesting_a_block
When you are assigned one or more IP addresses from ARDC, they are issues on license under the following terms: https://www.ampr.org/terms-of-service by using ARDC address space you are implicitly agreeing to these terms.
Thank you to everyone who has contributed to the portal effort.
© Copyright AMPRNet, 2008 - 2023. All rights reserved. | Coded by G1FEF | W3C Compliant XHTML & CSS [en]

portal.ampr.org

- Legacy Portal at https://portal.ampr.org
- Coming Q4 2023: Portal 2.0 MVP refresh
- Targeting 2024: Portal 3.0 Next Gen
  - Integration with “44Net.cloud” technology
- Supported use-cases:
  - Web based auto-provisioned IP addresses for OpenWRT routers with Wireguard
  - Allocation of /24+ and LOA for BGP
  - Continued support for IP-IP Mesh

Example: The Garbandy Tower (372m)

- Mounted on a 22-floor base
- located in the Netherlands
- houses 2m, 70cm, analog and DSTAR amateur radio equipment utilizing 44Net connectivity
- Includes IP Cameras using HAMNET

Photo courtesy Rob Janssen PE1CHL

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Example: 44Net PoP Easy C

PoP Subcommittee: Adam Lewis KC7GDY, Zach Seguin VA3ZTS

Establish a publicly routable 44Net VPN connection in minutes through NAT!

Auto provision IP Address + VPN Keys

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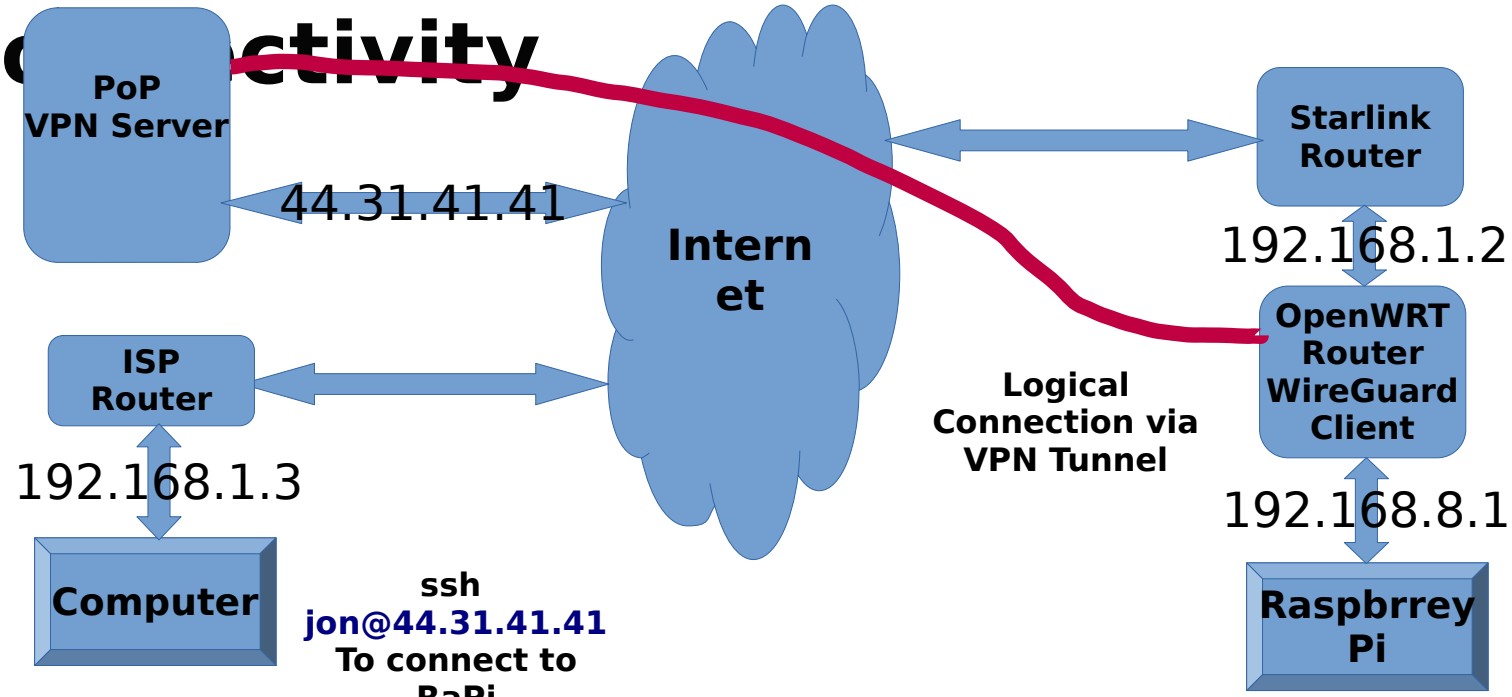
Example: 44Net PoP Easy Connectivity



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Technical Advisory Committee

A group of ham community volunteers with technical skills serving one year terms for up to 3 consecutive years.

- Participate in subcommittee technology development
- Meet weekly via video conference
- Have early access to foundation technical information
- Advise staff and board on technical solutions and policy
- Early adopters for new technology

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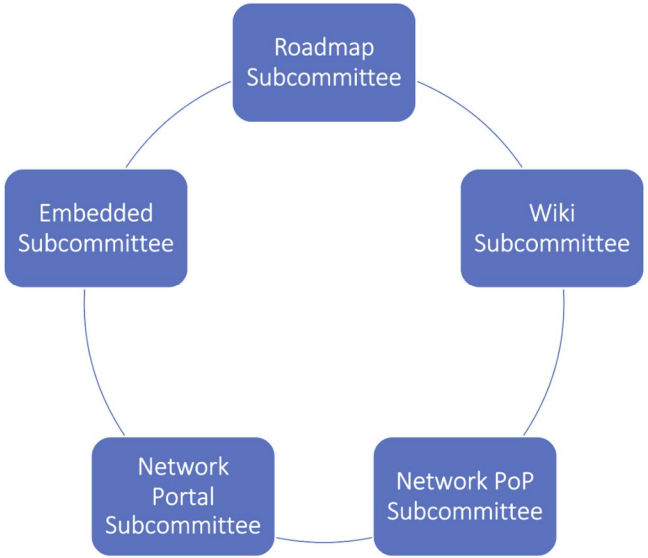
TAC Subcommittees



Roadmap Subcommittee:
Develop an architectural roadmap for future 44Net services and infrastructure.

Wiki Subcommittee:
Catalog 44Net use-cases and create substantive updates to the Wiki.

Network Portal Subcommittee:
Build and launch an upgraded 44Net management portal Minimum Viable Product.

Network PoP Subcommittee:
Develop and measure a 44-Net Proof-of-Concept Point-of-Presence.

Embedded Subcommittee:
Entry level embedded appliance reference design for 44Net.

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More Information

ardc.net

- Sign up for the newsletter
- Engage on GroupsIO
- Sign up for the 44Net Mailing List
- Join a community meeting

44Net

- Portal: portal.ampr.org
- Wiki: wiki.ampr.org
- Volunteer for the TAC
- Volunteer as a beta tester

Thank you community volunteers!

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Thank you!

Reach out any time! *contact@ardc.net*